



User Manual

JS-ICON™ 624 ARCH Dimmer Rack

JOHNSON SYSTEMS INC.

Spring 2007

www.johnsonsystems.com



JOHNSON SYSTEMS INC.

"PROFESSIONAL LIGHT CONTROL PRODUCTS"



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JS-ICON™ 624 DMX
JS-ICON™ 624 CC
6 - 2.4kW Dimming Strip



JS-ICON™ 624 ND
6 - 2.4kW Relay Strip



JS-ICON™ 624 PACK
6 - 2.4kW Portable Dimming Pack



JS-ICON™ 624 ARCH
6 - 2.4kW Centralized Wall Mount
Architectural Dimming Rack

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**This manual is accurate at time of printing
and subject to revisions and technical
updates as required without prior notice.**

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for applicable updates.**



Introduction

JS-ICON™ Architectural Dimmers represent performance and longevity at its finest! 16-bit high resolution fades provide smooth light control for the most demanding environment.

Suitable for virtually any application where centralized dimmers are required, this rugged hi-density design allows for adjacent side-by-side installation where additional dimming capacity is needed. Large power input terminals permit feeder power up to 40 Amps at 120/208 Volt three-phase or 60 Amps at 120/240 Volt single-phase.

Premium quality magnetic load breakers permit full loading of each circuit individually. Hinged control section access allows for ease of data and/or analog control termination. Quiet hi-performance chokes and "MagLev®" thermal management technology for superior cooling that is virtually silent. All electronics are easily and remotely monitored with intuitive status LED's. Wireless DMX receiver optional.

- Six 2400 Watt hi-performance dimmers.
- Dims standard incandescent, quartz, and low-voltage fixtures.
- Superior 16-bit fade resolution provides unmatched performance.
- Both DMX 512 and individual analog control inputs.
- Optional wireless DMX receiver eliminates control wiring.
- Status LED's allow easy remote setup and troubleshooting.
- Magnetic breakers for maximum circuit protection.
- Over-heat and over-current protected.
- Non-proprietary dimmer SCR's are 200% rated.
- 'MagLev®' thermal management technology for superior cooling that is virtually silent.
- Hinged SCR and data section for serviceability.
- Separate high voltage "contractor termination section".



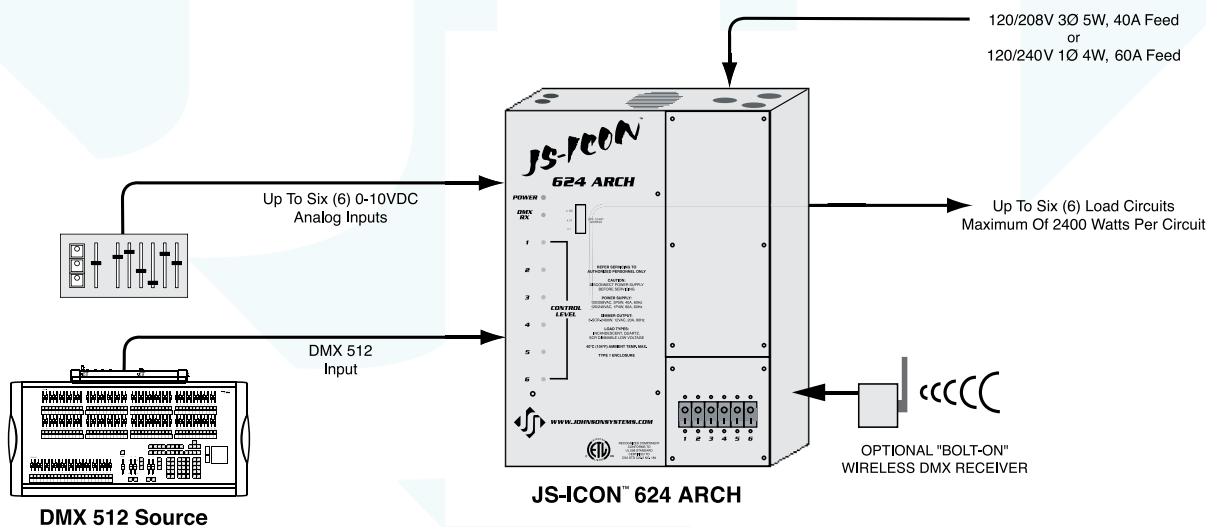
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Characteristics

- Power Requirements: 120/208 VAC 3Ø 5 wire up to 40A. Max. rating 14.4kW or 120/240 VAC 1Ø 4 wire up to 60A. Max. rating 14.4kW.
- Power Termination: Terminal block input and output.
- Environment: Temperature Range: 32°F (0°C) to 104°F (40°C) ambient. Humidity Range: 0% to 90% non-condensing.
- Dimmer Capacity and Load Type: 6 x 2.4kW standard incandescent, quartz, and dimmable (SCR/Leading-Edge) electronic low-voltage fixtures.
- Switch Type: 200% rated, non-proprietary SCR solid state relay.
- Rise Time: 300µs fully epoxy-encapsulated chokes are made from ultra low audible noise core material.
- Physical: 16.2"H x 12"W x 6"D (41.2cm x 30.5cm x 15.2cm).
- Weight: Approximately 35 lbs. (16 Kg).
- Material: 18-gauge steel CRS.
- Finish: Textured white powdercoat.



Typical System Installation

JS-ICON™ 624 ARCH - Six (6) CCTS.



Installation

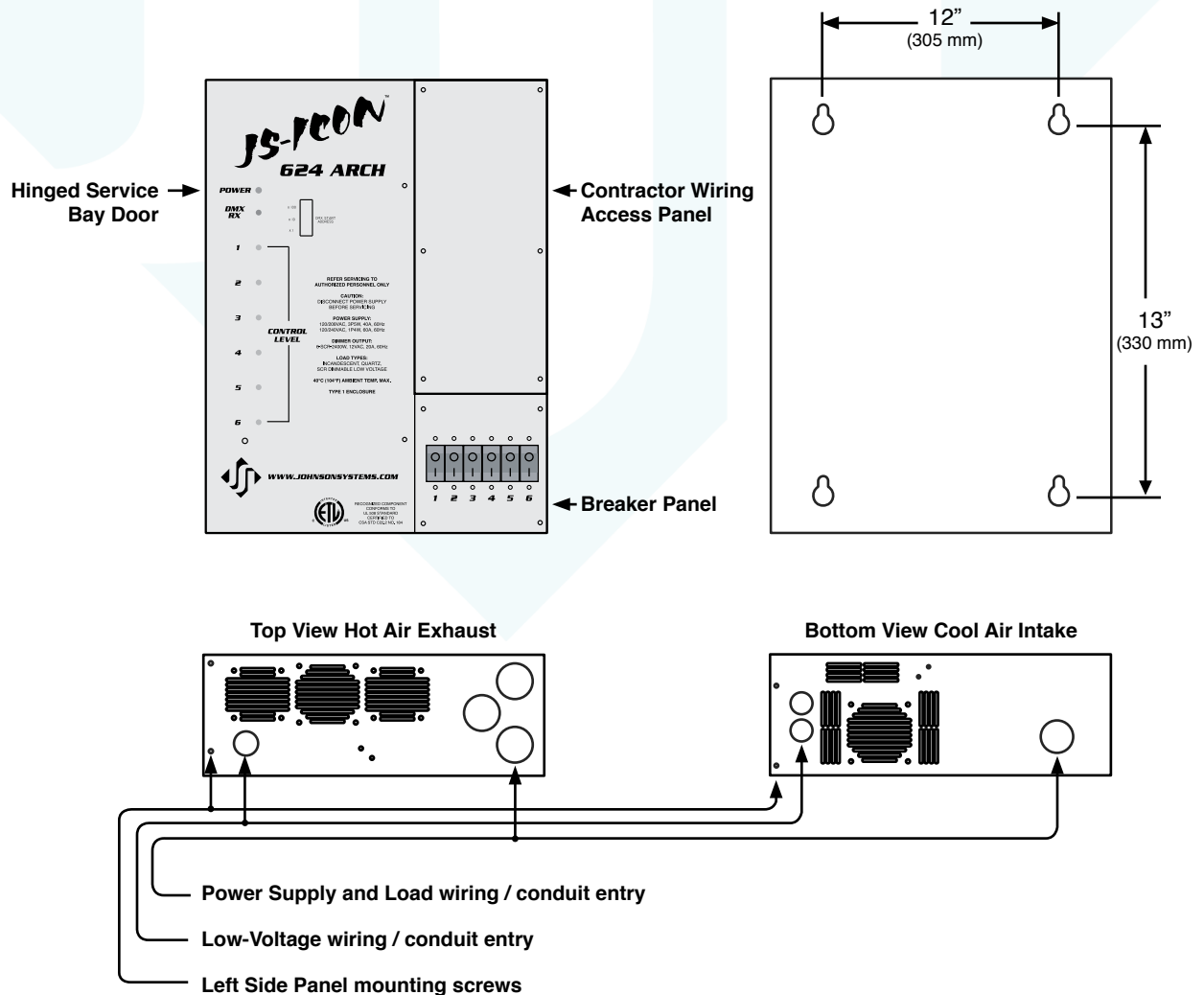
Mounting

The JS-ICON™ 624 ARCH can be mounted to any wall surface capable of supporting its weight (35 lbs (15.9 kg) for each rack). Four 1/4" (6mm) screws or bolts are required to fasten the rack safely to the wall (see the drawing below for mounting locations and dimensions). To access the mounting locations, remove the contractor wiring access panel, remove the breaker panel, and open the hinged service bay door. For further access to the mounting locations, the hinged service bay door, and left side panel, can be easily removed (see instructions on page 6 for more details).

Multiple racks may be mounted horizontally (side by side) with no clearance between them, while vertical mounting requires a minimum of 18" (432mm) of clearance between the racks to allow for adequate separation for ventilation. A minimum of 12" (305mm) of clearance is required for the racks cool air intake and hot air exhaust (see diagram on page 6 for more details).



WARNING: Mount the racks only as indicated above. Failure to comply may cause thermal overheating.





Installation

Removal of the Hinged Service Bay Door

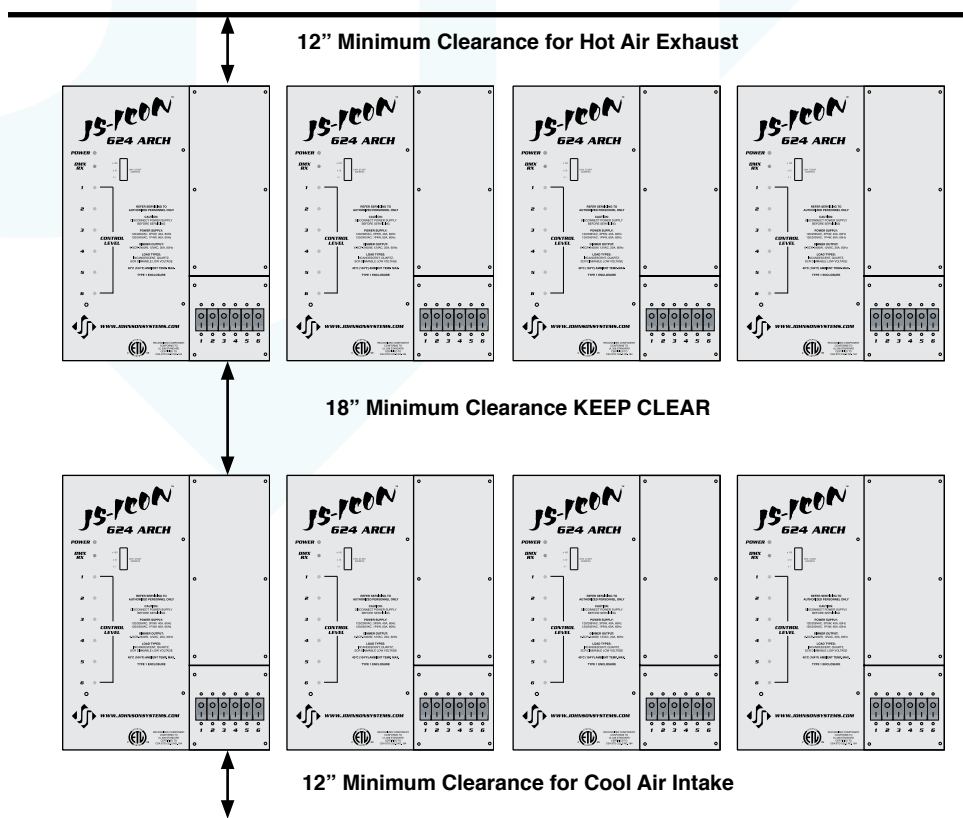
The service bay door is hinged for easy access for low voltage wiring hookup of DMX and analog control inputs, as well as service or replacement of the Solid State Relays (SSR). This door may also be removed for additional access for installation mounting.

1. Disconnect the ribbon cable connection from the Precision Demultiplexer PCB.
2. Squeeze the two spring loaded pins together on each of the hinges.
3. Pull the door forward to remove.

Removal of the Left Side Panel

The left side panel may be removed for service access to the Phase Reference PCB (see page 13 for details) or addition access for installation mounting.

1. Remove the four mounting screws on the top (two) and bottom (two) of the chassis.
2. Disconnect the ribbon cable connection from the PWM Distribution PCB.
3. Disconnect the power supply phase reference wiring connection (J1) from the Phase Reference PCB.
4. Disconnect the fan power connections (J2, J3, and J4) from the Phase Reference PCB.
5. Pull the panel forward to remove.





Power Supply Connection Details

The JS-ICON™ 624 ARCH is capable of various 120V power supply configurations. Remove the contractor wiring access panel to locate the contractor termination section, where the required power terminals are located. Knockouts on the top and bottom of the chassis are provided for wire/conduit entry to the power terminals.

WARNING: Wiring termination must be done by qualified personnel only!

Power Supply Configurations - Option 1:

Three-Phase with Internal Dimmer/Circuit Breaker Protection

120/208 VAC, 3Ø, 5-Wire up to 40 Amps per phase. Maximum 14.4kW total.

Use #2 to #12 AWG copper wire only, rated for 90°C minimum.

Torque power connections (A, B, C) to 5.0-5.6 NM (45-50 LB-IN).

Torque ground lug connection to 5.6 NM (50 LB-IN).

- Dimmers 1 and 2 are powered from Phase A.
- Dimmers 3 and 4 are powered from Phase B.
- Dimmers 5 and 6 are powered from Phase C.

NOTE: Power supply requires an external disconnect.

Power Supply Configurations - Option 2:

Single-Phase with Internal Dimmer/Circuit Breaker Protection

120/240 VAC, 1Ø, 4-Wire up to 60 Amps per phase. Maximum 14.4kW total.

Use #2 to #12 AWG copper wire only, rated for 90°C minimum.

Torque power connections (A, C) to 5.0-5.6 NM (45-50 LB-IN).

Torque ground lug connection to 5.6 NM (50 LB-IN).

- Dimmers 1, 2, and 3 are powered from Phase A.
- Dimmers 4, 5, and 6 are powered from Phase C.

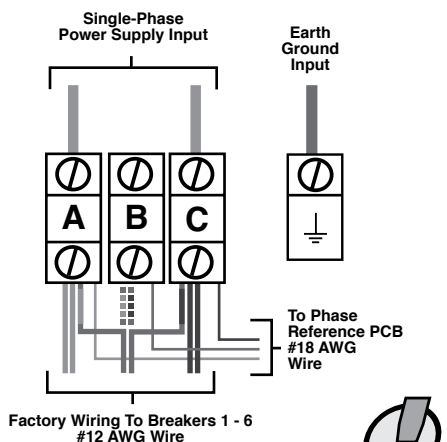
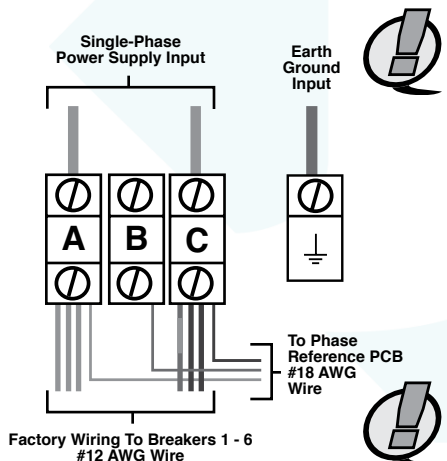
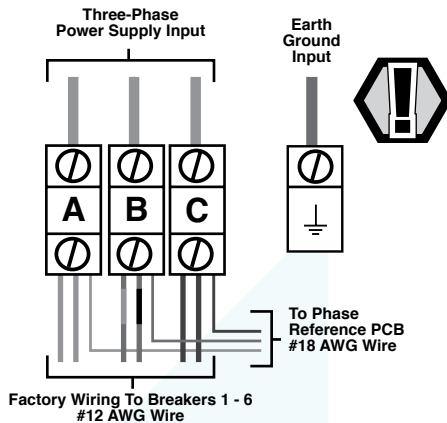
NOTE: Power supply requires an external disconnect.

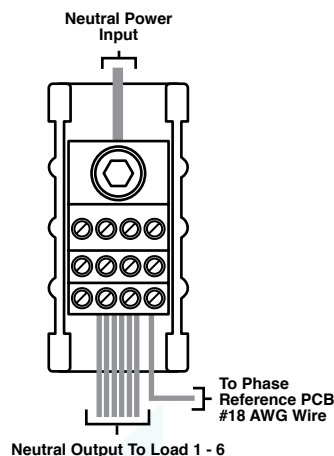
Three-Phase to Single-Phase Conversion

JS-ICON™ systems are shipped from the factory ready for three-phase operation unless otherwise specified at the time of purchase. The following steps will need to be followed to convert the JS-ICON™ from three-phase operation to single-phase operation.

1. Remove wire #3 (red #12AWG wire, marked with black heat-shrink) going from the B power terminal to breaker #3, and reconnect to A power terminal (dimmers 1, 2, and 3 are now connected to Phase A).
2. Remove wire #4 (red #12AWG wire, marked with blue heat-shrink) going from the B power terminal to breaker #4 and reconnect to C power terminal (dimmers 4, 5, and 6 are now connected to Phase C).
3. Reconnect the red #18AWG phase reference wire to the B power terminal.

NOTE: Be sure to set the 3-Phase/1-Phase select switch (located on the Phase Reference Printed Circuit Board) to the correct position to ensure proper dimming.





Power Supply Connection Details

Neutral Power Distribution Block

Neutral Input: Use 350 kcmil to #6 AWG copper wire only, rated for 90°C minimum.

Torque to 31 NM (275 LB-IN).

Load Output: Use #4 AWG to #14 AWG copper wire only, rated for 90°C minimum.

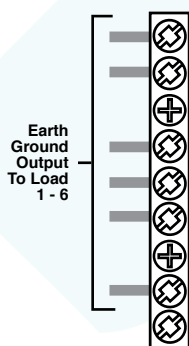
Torque #4 AWG to #6 AWG wire to 3.95 NM (35 LB-IN).

Torque #8 AWG wire to 2.82 NM (25 LB-IN).

Torque #10 AWG to #14 AWG wire to 2.26 NM (20 LB-IN).

Load Grounding Terminal

- Use #4 AWG to #14 AWG copper wire only, rated for 90°C minimum.
- Torque #4 AWG to #6 AWG wire to 3.95 NM (35 LB-IN).
- Torque #8 AWG wire to 2.82 NM (25 LB-IN).
- Torque #10 AWG to #14 AWG wire to 2.26 NM (20 LB-IN).
- Torque two (2) #10 AWG to #14 AWG wires to 2.82 NM (25 LB-IN).



Dimmer Output

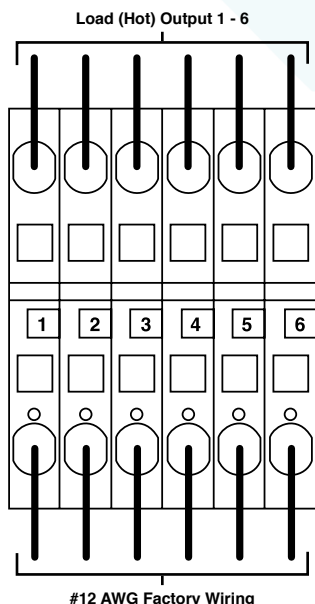
Six (6) 2400 Watt dimmers (maximum rating 14,400 Watts at 120 VAC).

JS-ICON™ 624 ARCH dimmers are designed for high performance dimming of standard incandescent, quartz, and dimmable (SCR/Leading-Edge) electronic low-voltage fixtures. Remove the contractor wiring access panel to locate the contractor termination section, where the required load terminals are located. Knockouts on the top and bottom of the chassis are provided for wire/conduit entry to the load terminals.

Load Output Connection Details

Load connections are terminated via six (6) tension clamp terminals.

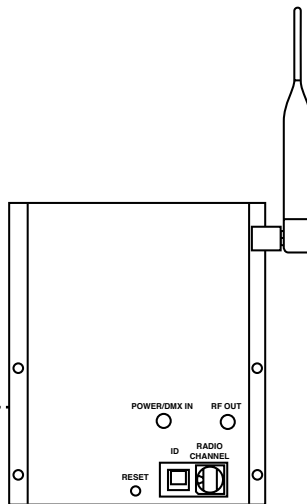
- Use #8 AWG to #20 AWG copper wire only, rated for 90°C minimum.
- Strip 0.39" (10mm) of insulation from the end of each load conductor.
- Pry the tension clamp open by inserting a small flathead screwdriver into the square slot.
- Insert the load conductor into the tension clamp, and remove the flathead screwdriver.



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**Wireless DMX Option**

Control Input

The JS-ICON™ 624 ARCH accepts both DMX 512-A protocol and analog 0-10VDC. These control inputs are configured for HTP (highest takes precedence) operation. DMX Data Input and DMX Data Thru is connected via internal breakaway type connectors. Analog 0-10VDC is connected via internal breakaway type connectors (see diagram on page 12).

Wireless DMX (WDS) is optional for all JS-ICON™ Series dimming models. The WDS (Wireless Dimming System) from City Theatrical has been selected for its reliability and ease of use. The "WDS Kit" - supplied only by Johnson Systems - can be easily adapted to all JS-ICON™ products. It comes complete with a wiring harness and mounting hardware, and installs quickly. For more information, see the JS-ICON™ Wireless DMX User Manual.

Status LED Indicators

POWER = Green

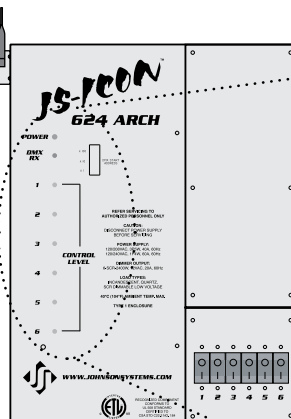
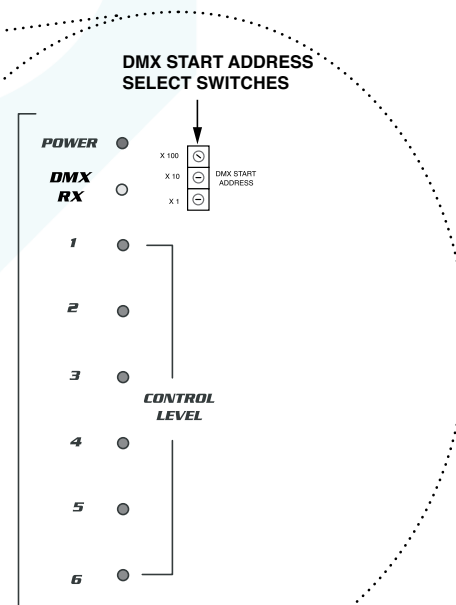
- ON when the on-board power supply is active, and the microcontroller is running.
- FLASHES when there is a microcontroller failure.
- OFF when Phase-A power is off, or a power supply failure occurs.

RX = Amber

- ON when valid DMX signal is being received.
- FLASHES when invalid DMX signal is received.
- OFF when no DMX signal is present.

CONTROL LEVEL = Blue x 6 (1 per channel)

- ON when dimmer control is being received via DMX and/or analog.
- Intensity will increase with the level of control being received.
- OFF when no dimmer control levels are received via DMX and/or analog.

**Status LED Indicators**



System Configuration and Setup

1. SETTING THE DMX START ADDRESS

Select the desired DMX start address for the JS-ICON™ via the three rotary DMX START ADDRESS SELECT SWITCHES located on the panel of the rack (as pictured on the previous page). This start address is selectable in single channel increments from 001 through 512. All dimmers within a given JS-ICON™ will numerically/incrementally follow the selected start address for a total of six channels. Therefore, if the DMX start address is 001, then the JS-ICON™'s dimmers will be addressed as 001, 002, 003, 004, 005, and 006.

2. CONFIGURE THE MODE SELECT DIP SWITCHES

DMX TERM: MODE SELECT DIP SWITCH #1

The MODE SELECT DIP SWITCHES are located internally, on the Precision Demultiplexer Printed Circuit Board (see page 13 for details). To access these switches, simply open the hinged service bay door.

Setting this switch to the "ON" position activates the DMX "end-of-line" termination. In a DMX network, the device that appears last in the daisy chain of devices is designated as the "end of line" and must be terminated properly to maintain the integrity of DMX data transmission. It is important that only the "end-of-line" device is terminated.

DMX HOLD: MODE SELECT DIP SWITCH #3

Setting this switch to the "ON" position activates the DMX Hold feature. With the loss of DMX, the JS-ICON™ will "hold" the last DMX data levels received for 2 minutes. Setting this switch to the "OFF" position disables this feature, and will "hold" the last DMX data levels received for 2 seconds.

DIMMER TEST: MODE SELECT DIP SWITCH #4

Setting this switch to the "ON" position activates the Dimmer Test feature. This feature enables the selection of one dimmer, or all dimmers, to be turned full on. Selection of the dimmer is via the rotary DMX START ADDRESS X1 switch. Setting the DMX address to "001" through "006" turns the corresponding dimmer output to full. Setting the DMX address to "007" turns all dimmers outputs to full on. Setting this switch to the "OFF" position will permit normal operation via DMX and/or analog control.

CURVE SELECT: MODE SELECT DIP SWITCH #5 AND #6

These two DIP switches allow for modification of the dimmer output curve. Below is a selection chart including the four possible dimmer output curves.

DIP SWITCH #5	DIP SWITCH #6	DIMMER CURVE
OFF	OFF	Square Law (Factory Default)
OFF	ON	Direct Drive
ON	OFF	Channel 1 functions as non-dim with a 50% threshold trigger. Channels 2 - 6 are assigned as Square Law.
ON	ON	All dimmers function as non-dims with a 50% threshold trigger.

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Basic JS-ICON Troubleshooting

Fault/Complaint	Status LED Indicators	Possible Reason/Fix
No output (all circuits).	Power LED Off.	No power to system. Check main breaker.
No output (all circuits).	Power LED Flashes.	Microcontroller failure. Contact factory.
No output (all circuits).	Power LED On, RX LED Off.	No DMX signal is present.
No output (all circuits).	Power LED On, RX LED Flashes.	Invalid DMX signal is received.
No output (all circuits).	Power LED On, RX LED On, Control Level LED's Off.	Verify correct DMX Start Address is set. Internal hardware failure. Contact factory.
No output (all circuits).	All LED's On.	Dimmer circuit breakers off or tripped. Check breakers.
No output (one or more circuits).	All LED's On.	Dimmer circuit breaker(s) off or tripped. Check breakers. Burnt out lamp(s) or defective fixture. Replace with known good fixture and lamp.
Light(s) do not dim, on/off only.	All LED's On.	JS-ICON™ configured as a "non-dim". Check DIP switch settings. JS-ICON™ incorrectly wired. Verify contractor wiring and power type (1-phase or 3-phase). Confirm model number power requirement. Contact factory.
Lights on circuits 3 and 4 do not dim, on/off only.	All LED's On.	JS-ICON™ incorrectly wired. Verify contractor wiring and power type (1-phase or 3-phase). Verify 1-phase/3-phase switch is set for the correct incoming power supply type.
Light(s) will not dim out completely.	All LED's On.	Control levels present on DMX. Check DMX. Analog signal present. Remove analog signal source and re-check.
Lights stuck on.	Power LED On, RX LED On, Control Level LED's Off.	Defective SSR. Replace SSR power pack.
Lights off, no control.	Power LED On, RX LED On, Control Level LED's On.	Dimmer circuit breaker(s) off or tripped. Check breakers. Burnt out lamp(s) or defective fixture. Replace with known good fixture or lamp. Defective SSR. Replace SSR power pack.
Lights flickering.	Power LED On, RX LED On, Control Level LED's On or Off.	Defective SSR. Replace SSR power pack.
Lights flickering.	Power LED On, RX LED On, Control Level LED's flickering between On and Off.	Noise on DMX line. Verify DMX termination is correct for the system. Noise on analog inputs. Disconnect analog inputs and re-check. Defective SSR. Replace SSR power pack.



WARNING: Ensure all power is disconnected prior to servicing! All servicing of this product should be performed by authorized personnel only! Unauthorized service may void the warranty!



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Precision Demultiplexer Printed Circuit Board

DMX INPUT/THRU Connection (J11)

This internal DMX connection may be used alternatively to the external 5-Pin XLR connectors. It is also the location used for connection of the wireless DMX receiver option.

MODE SELECT DIP SWITCHES

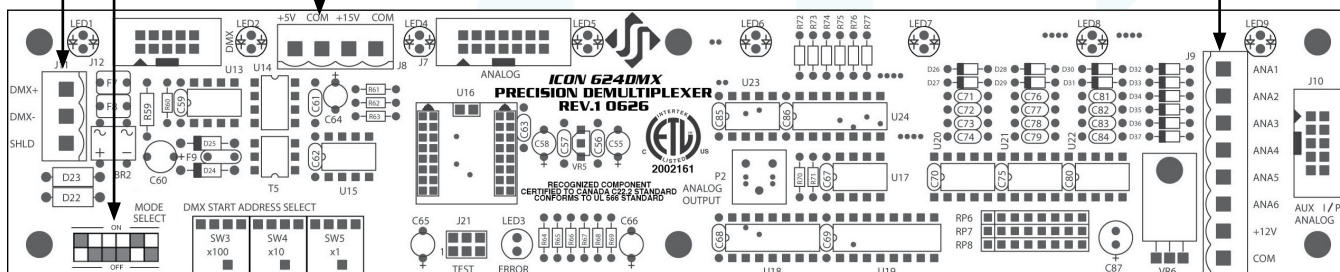
Provides system configuration options (see page 10 for details).

+5VDC and +15VDC Power Supply Output Connection (J8)

This connection supplies power for external devices. The +5VDC supply is normally used for powering the wireless DMX receiver option, while the +15VDC supply may be used for other external devices. External devices should not exceed the maximum combined current draw of 200mA.

0-10VDC Analog Inputs with +12VDC Power Supply (J9)

This connection is the location to land the 0-10VDC analog inputs. "ANA1" through "ANA6" controls dimmer 1 through dimmer 6 respectively. This connection also provides a +12VDC power supply normally used for powering external analog devices. External devices should not exceed the maximum combined current draw of 200mA.





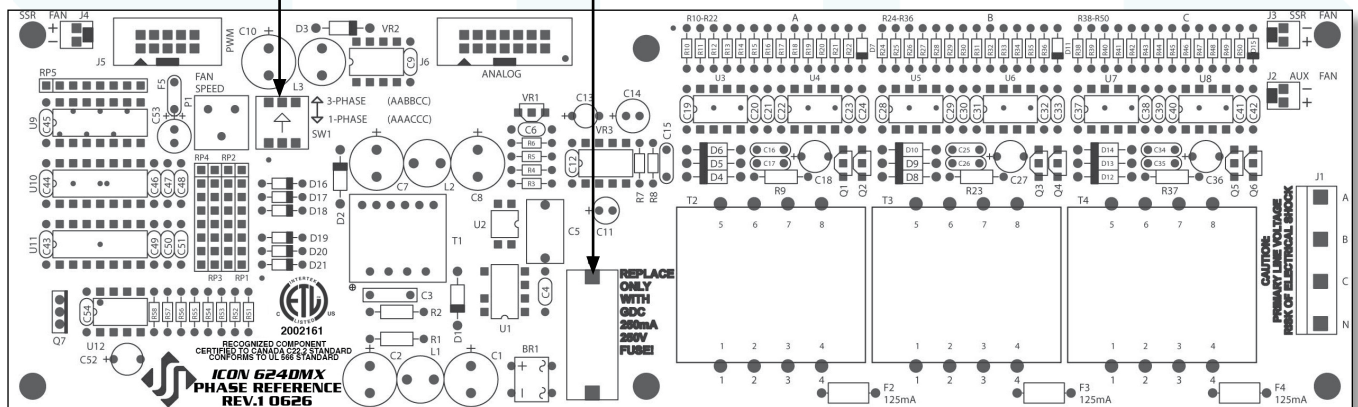
Phase Reference Printed Circuit Board

3-Phase/1-Phase Select Switch (SW1)

This switch enables selection of 3-Phase or 1-Phase operation of the JS-ICON™. If this switch is not in the correct position, dimmers 3 and 4 will not dim correctly and appear as though they are non-dim. Refer to 3-Phase to 1-Phase conversion directions on page 6 for more details.

DC Power Supply Fuse (F1)

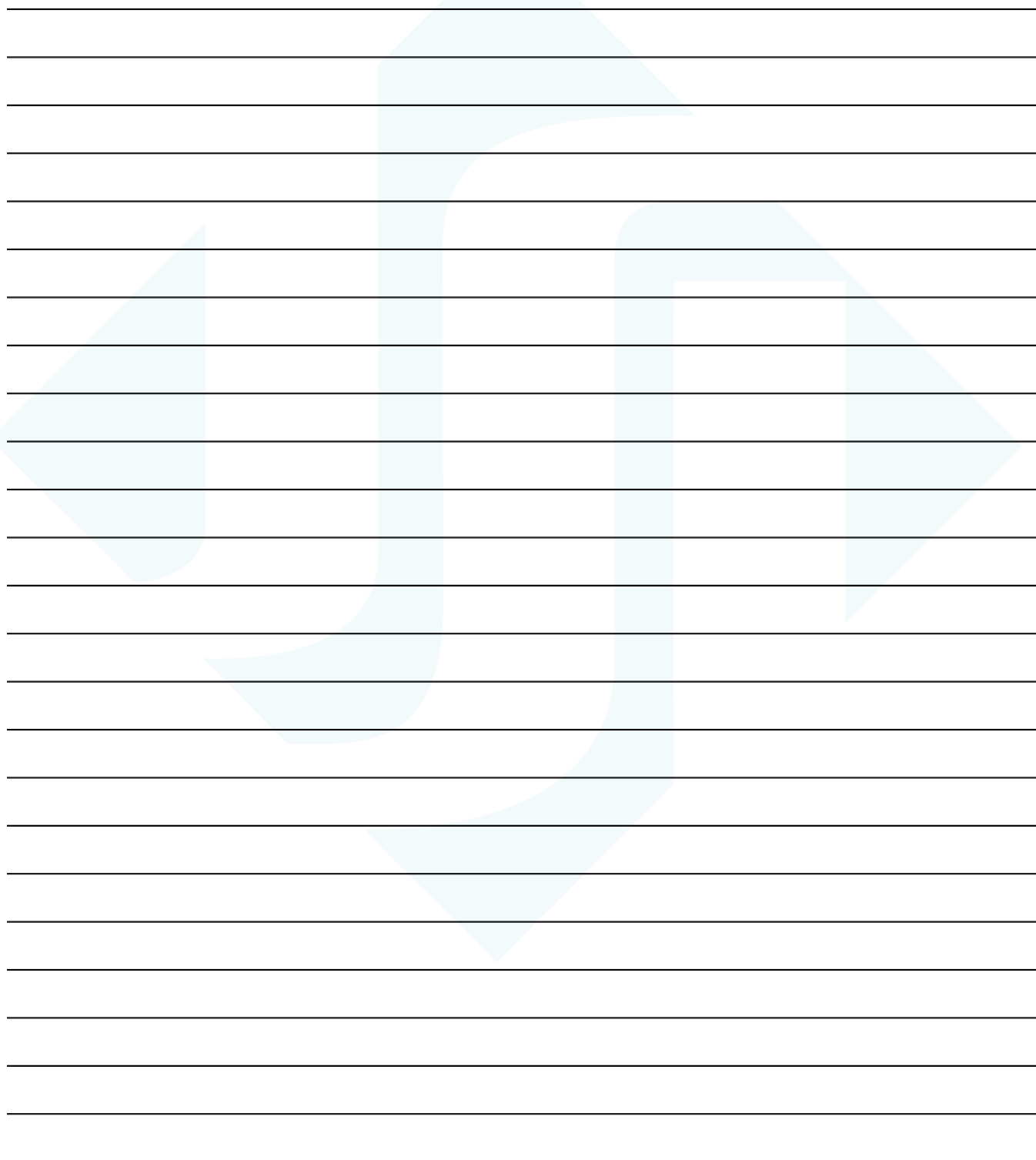
This fuse protects the on-board switch mode DC power supply from over-current. If the "POWER" LED is not illuminating, and AC power is present on phase A, check the fuse by removing the fuse holder cap and inspecting, or measure continuity. If the fuse needs to be replaced, only use a fuse rated the same as the original GDC 250mA 250V fuse.





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Notes





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